Ma Bell Eyes New Markets

The telecommunications giant may soon be connecting computers to the party line

Plain old telephone service used to be the sole business of American Telephone and Telegraph (AT&T), a regulated monopoly and the world's largest company.

No longer. The courts, Congress, and the Carter Administration are making moves to unshackle Ma Bell from regulations that have barred her entrance into new fields. Most recently, the Federal Communications Commission (FCC) gave its blessing to an ambition long held by Ma Bell—full entry into the field of data processing. The financial implications for the Bell System are enormous. By 1990, the computer-telecommunications market will be worth an estimated $380 billion.

For Bell Laboratories, these moves mean the end of regulatory constraints that have helped to keep the prestigious research organization from using its vast capabilities in the service of AT&T product development—a definite problem in the past. It was, after all, equipment manufacturers other than Bell who first introduced transistors, integrated circuits, and most recently microprocessors into telephones, making them perform more and more like computers. This is especially ironic, as the transistor was invented at Bell Laboratories.

For consumers, Bell's expansion into data processing could lead to the rapid development by AT&T of such services as home computers that read utility meters, control heat and light, and display on a TV screen telephone directories, airline schedules, and the latest news.

For industry, regulators anticipate that the expansion will lead to increased competition and greater technical innovation. Said FCC Chairman Charles D. Ferris after announcing the pioneering AT&T decision: "We have today removed the barricades from the door to the information age. Government will no longer be a barrier that prevents or delays the introduction of innovations in technology."

That may prove a bit hyperbolic. The expansion, after all, might also signal the start of trade wars that pit the Bell System against industry giants such as International Business Machines (IBM)—a competition that could result in the elimination of scores of smaller companies.

Interestingly enough, both AT&T and IBM are looking forward to this competition for reasons that have nothing to do with the marketplace. The Department of Justice currently has antitrust suits going against both corporations. The 6-year-old suit against Bell is aimed at the breakup of the entire Bell System, with divestiture of its manufacturing arm (Western Electric), its 22 operating companies (such as Wisconsin Bell), its long-distance division (Long Lines), and parts of Bell Laboratories. Lawyers for both companies hope to use AT&T's official entrance into the computer field as evidence of new competition, thus resolving the monopoly issues.

Unlike IBM, smaller companies are clearly worried. Within hours after the FCC announced the final decision in its Second Computer Inquiry last April, 33 computer-based service companies, computer manufacturers, and trade associations filed for a review of the decision of the U.S. Court of Appeals for the District of Columbia. They fear Bell's monopoly power will be used in anticompetitive ways. Stopping the FCC in court, however, may not help. Congress is now considering legislation that would effectively overhaul the nation's communication's laws, and in the process also let AT&T use some of its staggering resources to enter new businesses.

Why unleash Ma Bell? One reason is that new, unregulated competitors for more than a decade have been taking a greater and greater share of Bell's equipment market, and Bell has not been able to fight back effectively. The FCC unleashed this wave of unregulated competition in 1968 by saying anyone could hook up their own equipment to Bell's lines. Though Bell had only a few competitors that year, the so-called "interconnect" industry has now grown to more than 2000 firms. These companies have a competitive advantage because the equipment they sell is not "tariffed," not subject to pricing review by the FCC. In addition, they can come to a Bell tariff hearing at the FCC and take part in the debate over the fairness of a particular price Bell is asking, on occasion delaying the introduction of a Bell product for years.

Another, even more fundamental reason for unleashing Bell is that the line between the telephone and computer industries has blurred. In the past decade, the interconnect industry has pioneered sophisticated products that look and act more like computers than telephones. In 1976 and again in 1977, Bell tried to kill off this competition with the so-called Bell Bill. Failing legislatively, AT&T has now responded by introducing its own computerish products—a fact that has raised serious philosophical questions for regulators, who, under the Communications Act of 1934, have authority over telephones, not computers. In the face of this regulatory ambiguity, the FCC now wants to back off from regulating Ma Bell altogether, letting her officially enter the field of data processing.

This is the first of a two-part series on how shifts in U.S. policy and the evolution of technology are changing the definition of what it means to be AT&T—a company that has 1 million employees, 3 million stockholders, and assets of more than $113 billion. The second part will look at the competitive challenge Bell is facing in the transmission of phone and computer signals from companies such as MCI Communications Corp., which recently won a $1.8 billion antitrust suit against the Bell System.

Fighting the decision on a variety of grounds are interconnect companies and small computer firms. Most importantly, they claim that the FCC has tried to reverse the ruling of the Supreme Court with respect to the 1956 AT&T–Justice Consent Decree, which ended a massive antitrust suit and by most interpretations limits AT&T to regulated communications businesses. The dissidents also say the FCC has tried to usurp state's rights to regulate AT&T, and has assumed the outcome of some 48 private antitrust suits against AT&T in addition to derailing the current Justice Department suit. The Center for Communications Management in a review of the FCC decision put it this way: "Due to the short-

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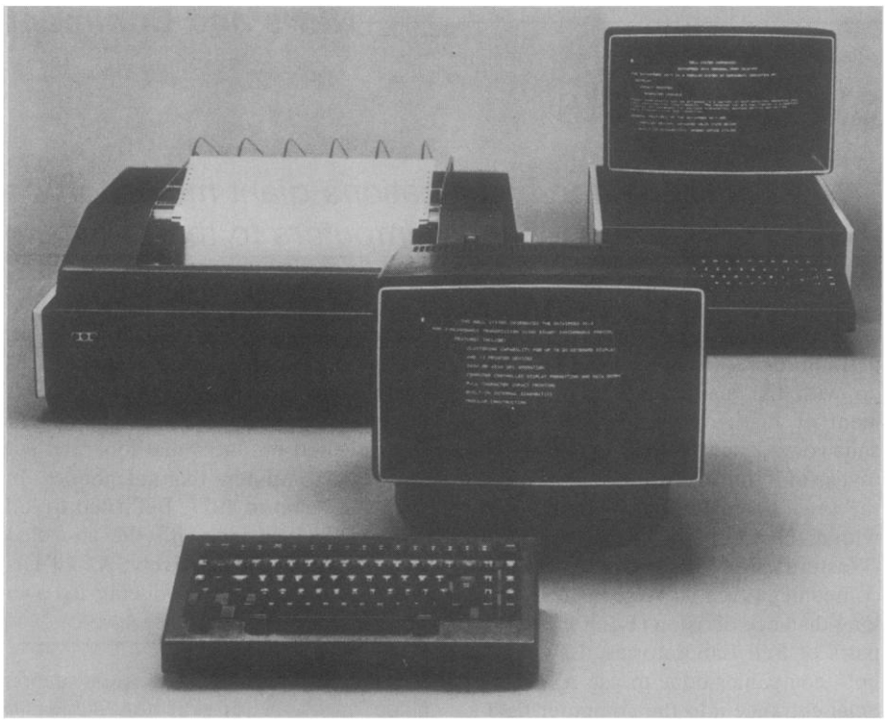

AT&T Photo

Is the Dataspeed 40/4 computer or communications device? "Sound arguments can be advanced in support of either proposition," said FCC chairman Richard E. Wiley in 1977. "Under the circumstances, the Commission should consider the consequences for consumers if they are denied access to desired equipment."

sightedness of our founding fathers, the FCC was not included as one of the original branches of government. The commission, however, has recently taken steps to correct that oversight."

Realizing the controversy its decision would stir, even the commission showed some hesitation. Says Philip Verveer, chief of the FCC Common Carrier Bureau: "When a commission votes for something by a majority of 5 to 2, and then four of its members indicate they want changes made, as has happened here, their decision is open to criticism in court. It's easy to argue, 'These guys didn't know what they were doing.' "

In light of these problems, one might conclude that the FCC ruling will be shot down and that Ma Bell will never sink her revenues into the field of data processing. Wall Street does not see it that way. Last March AT&T stock was selling at its lowest price in 5 years. In 4 days of active trading after the 7 April FCC decision, the market value of the stock rose by more than $1 billion.

The groundwork for the inevitable unleashing of Ma Bell was laid back in 1968 when the FCC handed down its historic Carterfone ruling, saying AT&T could not deny a company the right to hook up *its equipment*—in this case, a mobile radio telephone produced by the Carter Electronics Corporation—into Bell's telephone lines. Almost overnight an industry sprang up that offered Bell customers the chance to buy a variety of novelty items such as telephone receivers in the shape of Mickey Mouse. More significantly, a heated battle soon shaped up in the business equipment field, with some of the devices being a generation ahead of anything then marketed by Bell. Moreover, they were for sale rather than rent—enabling businesses to save substantially by eliminating Bell's monthly rental fees.

As a result of this interconnect competition, the telecommunications giant began to fundamentally alter the way it did business. The corporate marketing organization was bolstered with several hundred recruits, and, in a rare move for a company that usually draws upon its lower ranks for executive material, the head of AT&T market planning was replaced with Archie J. McGill, a former IBM executive.

In an attempt to keep up with the competition, Bell is even starting to offer products and services that push the state of the art—ones that also, intentionally or not, increase the pressure on regulators to let AT&T enter the field of data processing. Take the small but not insignificant example of a computerized telephone exchange (known as a Private Branch Exchange or PBX) at a large corporation. Among other features, this piece of AT&T equipment can stack calls coming to a particular corporate phone number from outside and tell the caller to "wait." In addition, it can be programmed to dial frequently used numbers, to ring a phone with different sounds that indicate where a call is from (at which point a user might choose to ignore it), not to ring a certain phone at all (when a user wants privacy), and to route long-distance calls along the most inexpensive path. In recent years regulators have classified and tariffed these programmable PBX's as "communications" devices, even though this type of "telephone exchange" when installed at a hotel can control individual room temperatures or keep track of personal laundry and then add the cost of cleaning to a guest's bill.

Also crossing the boundary between computing and pure communicating are computer terminals. In the past, these were "dumb" devices that would merely send messages to a remote or "mainframe" computer often located hundreds of miles away and reachable only over expensive, ofttimes unreliable data transmission lines. Today they are quite "smart." With the help of the tiny, ubiquitous microprocessor, they can, for instance, edit a written text, correct errors, and store pages and pages of written text at the terminal. Known as distributed processing, this at-the-terminal computing reduces the need for lengthy and therefore expensive interactive connections with the remote computer.

While distributed processing reduces costs, it also increases regulatory ambiguity. In 1977, for instance, when the FCC still claimed jurisdiction over all Bell's products, the commissioners overturned a decision by the chief of the Common Carrier Bureau and allowed AT&T to market its Dataspeed 40/4, a "smart" terminal. This meant that in terms of regulatory law the Dataspeed was a communications device. But there were many who felt the bureau chief had been on the right track in denying Bell a tariff. After all, almost identical to the Bell Dataspeed was a "computer" marketed by IBM, the 3270.

There is also some evidence that Bell may have tried to force the issue of regulatory purview. Consider its Advanced Communications System (ACS), a service that clearly crosses the blurred boundary between data communications and data processing.

Proposed in 1978 with much fanfare, the ACS would enable virtually any computer or terminal using any computer language to "talk" to any other computer over a nationwide network that could be dialed up over ordinary phone lines. This is a significant feature, since most data networks today can be used for only

one specific purpose. Some large corporations, for instance, have more than one internal data communication network, none of which can talk to the other. The ACS network would also provide text-editing and address-storage memories, so that even "dumb" terminals could be hooked up to a phone line and function as terminals for limited data processing or electronic mail.

The system looked perfect, until last year, when Bell announced that the big data network was going on hold. Ostensibly, the problem was software for the ambitious system. According to some industry observers, however, AT&T was using the technical delay to sit back and see just how hard the wind of deregulation was going to blow.

The wait was not long. On 7 April the FCC acted to reorganize the burgeoning telecommunications industry, completely deregulating the marketing of all terminal equipment—from simple telephones to the most sophisticated computing devices. At the same time, the FCC Commissioners abolished restrictions that have prevented Ma Bell from entering data processing.

The FCC took pains to protect small terminal-equipment manufactures and data-processing companies, though many observers say the protections are too weak. By March 1982, both AT&T and General Telephone and Electronics, the nation's second largest phone company, must set up separate, "arm's length" subsidiaries to handle all nonregulated businesses. The idea is to prevent them from subsidizing new competitive, unregulated activities with revenues from basic telephone services, which remain under FCC regulation.

Critics of the decision say these arm's-length safequards are not enough. "I

Biologist Is New Head of Kennedy Institute

Thomas Joseph King, a developmental biologist who for the past 8 years has been an administrator at the National Cancer Institute, has been selected as director of the Kennedy Institute of Ethics at Georgetown University. He succeeds Andre E. Hellegers, who died suddenly in May 1979 at 52. The Dutch-born Hellegers was a man of rare erudition who more than any other individual was responsible for conceiving and establishing the institute.

King, who like his predecessor is a Catholic, has little or no training in philosophy or ethics other than what he got as an underegraduate at Jesuit-run Fordham University. However, he has extensive research and teaching experience and is regarded as a seasoned administrator, having headed the department of embryology at the Institute for Cancer Research in Philadelphia before coming to Washington in 1967, and been director for the past 6 years of the division of cancer research resources and centers at NCI. He has been familiar with the institute since its founding in 1971, when he was professor of biology at Georgetown.

King is a gracious and reserved man who is eager to learn about the new field he is about to plunge into. "I have got to learn to think in different terms," he told *Science*, admitting, "my ethics is thin." King said he accepted the job offer because he is fascinated with the diversity of ethical problems being explored at the institute, and because it offers him an opportunity to become more intimately involved with research.

The Kennedy Institute is a unique setup, divided as it is into three parts: laboratories for reproductive biology, where researchers are exploring such ethics-related matters as diagnosis of genetic disorders in utero; a center for population research, which focuses in particular on population growth in developing countries and the implications of an aging population in developed countries; and a center for bioethics.

The institution most closely comparable with the Kennedy Institute is the Institute for Society, Ethics, and the Life Sciences in Hastings-on-Hudson, New York, headed by philosopher Daniel Callahan. A major difference between the two is that the Kennedy Institute has close ties with Georgetown and is thus in a better position to have a direct impact on budding ethicists in all fields. King adds that whereas the Hastings center has groups working on interdisciplinary projects designed to cast light on specific public policy questions, the Kennedy Institute, where individual projects are allowed, operates more as a forum for identifying problems and promoting public discussion.

So far, one of the institute's major contributions has been compilation of the first comprehensive Encyclopedia of Bioethics, published in 1978. Professionals at the institute have also become an established source of advice to the federal government through its various ethics commissions and advisory boards.

Photo by Constance Holden

The institute's unusual organization reflects the personal interest of Hellegers, a researcher as well as obstetrician and gynecologist, in reproductive biology, and that of the Kennedy family, which is particularly interested in prevention of mental retardation. King says his immediate concern will be building up the research end, which he says has been on the "back burner."

King's own ethical views are pretty down-home. "I think a lot of people are looking to ethics now to set the tone of human conduct," he says, because old codes of behavior are not covering new circumstances and people are no longer looking to religion to supply their ethical context. "We know something is missing in our interactions with one another, but we're not quite sure what it is. . . . A lot of people are groping for guidance."

—CONSTANCE HOLDEN

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think AT&T has done an effective brainwashing job on the members of the commission as it has on the members of Congress," says Jack Biddle, president of the Computer and Communications Industry Association. "They have instilled an artificial fear that if you tamper with Bell's vertical structure the entire telephone system will collapse. But that's a false issue. There are 1600 companies that provide our phone service, and they are not vertically integrated or owned by Ma Bell."

Fighting the wind of deregulation along with Biddle are companies such as Tymnet, which currently markets an intelligent data network similar to Bell's proposed ACS. Tymnet, and hundreds of other small companies (small in comparison to Bell's $113 billion in assets), fear that the FCC ruling does not contain sufficient provisions to ensure that AT&T will not cross subsidize its unregulated data processing businesses with money and proprietary information from its basic telephone service. Such fears have a historical basis. For decades, Bell has subsidized local service with the money made in the lucrative long-distance market, a fact which has made simple phone service affordable to millions of households. Small computer companies and the interconnect industry are afraid that an updated version of this cross subsidization could put them out of business. To make Ma Bell's inevitable entry into data processing less threatening, they want increased safeguards on the institutional separations between Bell and its subsidiary that sells enhanced services and computer equipment. For example, the FCC would allow AT&T to sink administrative support, accounting, manufacturing, research, and development into its new subsidiary, only marketing and software development having to be totally separate. Under this arrangement, Western Electric, which currently manufactures all equipment for the Bell System and which by itself is the 17th largest industrial firm in the United States, could manufacture and sell computers to the new subsidiary—as long as it was on an arm's-length basis, that is, as long as the prices it charged the subsidiary were the same as those charged anyone else who wanted to buy the equipment.

Critics of this arrangement abound, saying the degree of interrelatedness would make the system impossible to police. Their complaints boil down to an *out-and-out* total distrust of the Bell System. They point, for example, to the Justice Department's antitrust complaint

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Law of Sea Conference Still in Deep Water

The United Nations Conference on the Law of the Sea (UNCLOS) met in Geneva on 28 July to wind up its ninth session, which, like a feline ninth life, looks like a last chance. The current effort to carry out a comprehensive overhaul of international law applying to the seas began in 1974. Agreement has been reached on most of the nearly 400 articles on the agenda, but the conferees are still at odds on the matter that has been the major sticking point since the conference began—the control of mining operations on the deep seabed.

This has been the main issue dividing the less developed countries (LDC's) and the United States and other Western, industrialized nations. Prospects for a compromise were cast into deeper doubt recently by enactment by Congress of a Deep Seabed Hard Minerals Resources Act. The new act assumes that a Law of the Sea treaty will eventually come into effect and says the purpose of the U.S. act is to provide a "legal regime" to permit the development of necessary mining technology in the interim. The U.S. law even prohibits commercial recovery of minerals until 1988. But many LDC's have said that passage of such legislation by the United States at this point would be regarded as a deliberate affront and could threaten the fragile consensus on which completion of negotiations depends.

The principal issue to be resolved concerns the composition and rules of the council of the proposed International Seabed Authority, which would oversee mining activities. The conferees have already reached accord on a general regime for seabed mining. The LDC's had wanted rights restricted to an internationalized mining organization while the industrialized countries insisted that the licensing system be open to mining companies, whether private or governmental. As a compromise, a "parallel" system was created under which both companies and an international entity, known as the "Enterprise," will operate under the seabed authority.

Tough questions of detail were deferred. In dispute in particular is a demand by the United States and other potential mining countries that they have a "blocking" vote or veto in the council over issues that they see as clearly contrary to basic national interests.

Other kinds of issues also remain unsettled as, for example, the setting of boundaries in waters claimed by adjacent coastal states. But those affecting the rules of the council appear to be the crucial ones.

What would be the consequences of a failure to reach agreement, particularly if blamed directly on the United States? A suggestion pushed by some American mining interests is that seabed mining be separated from other issues and the matters be handled in separate treaties. Informed observers feel that it is unrealistic to think that the LDC's would accept such a departure from the original understanding that the treaty would be negotiated as a total package.

One possibility is that failure to agree on the mining issues would lead to the unraveling of the whole fabric of agreements already reached. Many of these points involve navigation and overflight rights in which the United States has a heavy stake. As a country with global military and commercial interests, the United States puts heavy emphasis on freedom of navigation. Since the Soviet occupation of Afghanistan, the taking of the hostages in Iran, and the increase of tensions between the Thais and Vietnamese, freedom of the seas considerations have grown even more important. In recent years, the tendency, particularly among LDC's, has been to extend territoriality offshore and restrict navigation rights. Parts of the Law of Sea text negotiated so far restrain this tendency. In the final phase of negotiations, therefore, the United States appears to face a conflict between economic and political advantage.

With plenty of uncertainties already hovering over the negotiations, a new one is added by the quadrennial possibility of changes at the White House. Advent of a Reagan Administration is apparently viewed by many of the UNCLOS participants as making a U.S. ratification of a treaty harder. Whether this view will make the LDC's more or less amenable to compromise on the outstanding differences is at this point unclear.

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against AT&T—a 1872-page document full of allegations about Bell's anticompetitive past. Tymnet in its Petition for Reconsideration of the FCC decision cites another example. Prior to the hoopla surrounding the announcement of ACS, Bell was meeting 90 to 95 percent of its due dates for the installation of transmission lines ordered by Tymnet. After the announcement, however, Bell met only 60 to 65 percent of the due dates—a fact that has slowed the expansion of Tymnet, a potential competitor to Bell's ACS. To help allay such problems in the future, computer firms want total separation between AT&T and its new subsidiary. Much more attractive than the FCC ruling in this regard is the House rewrite of the 1934 Communications Act, H.R. 6121, which if passed would result in a fully separate Bell subsidiary with its own research, manufacturing, marketing, and maintenance.

Bell too has complaints about the FCC decision. AT&T vice chairman James E. Olson protested that the March 1982 deadline for setting up a separate subsidiary was "much too soon to accomplish the radical restructuring that would be necessary" for Bell to compete in a unregulated market.

Some industry observers suggest that the FCC has purposely exaggerated its position so as to give itself more negotiating room in the inevitable bickering that follows a sweeping decision. Bell, for instance, could be granted a much longer period for making the separation. And, to placate the computer and interconnect companies, the FCC could tighten up the separation requirements for Bell's new subsidiary.

When pressed, one FCC official admitted that the April decision is an experiment in deregulation. "Who knows what's going to happend when you take a $120 billion company [AT&T] and deregulate it, or when you let IBM into the communications market on an unregulated basis. Nobody knows. Economic theory can tell you some things. Experience can tell you others. And you can draw some very firm conclusions from that. But you don't know precisely what's going to happen 5 years from now."

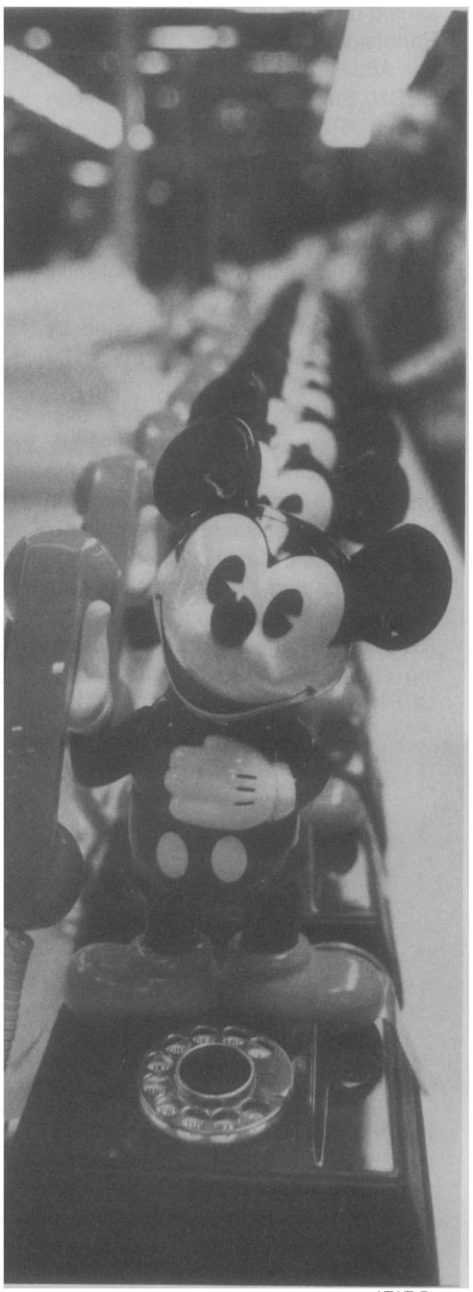
This uncertainty has upset some computer companies and financial analysts, who say the ambiguous future is not helping attempts at capital formation. What, they ask, is to keep the FCC from deregulating the telecommunications industry and then coming back and reregulating it if the "experiment" does not work, reregulating and expanding into data processing? "For new entrants into the field, this uncertainty is probably the toughest thing of all," says Winston E. Himsworth, a vice president of Salomon Brothers, an investment banking firm that specializes in telecommunication stocks. "Suppose that some small company that enters the field of data communications is a big success. What's to keep the FCC from coming in and regulating it on a rate-of-return basis, giving then a 12 percent return on equity? This means that venture capitalists who are willing to take the risk to make a good profit 4 or 5 years out get frightened off. Why not just invest in AT&T and forget the risk?"

The prospect of the FCC coming back in to regulate part of the data processing field also raises jurisdictional issues. The FCC thinks it has this right. Most everyone else does not. Significantly, the legislative rewrites of the Communications Act of 1934 that are now tied up on Capitol Hill deal with this issue, the Senate version having an "unforeseeable futures" clause that spells out increased authority for the FCC. The House version does not.

Most observers, including Bell officials, feel that legislation is the key to stabilizing the telecommunications picture, but it is far from certain that Congress will succeed in passing a new communications act this year. Recently, the House Judiciary Committee asked that the whole effort to restructure AT&T be abandoned until the Justice Department completes its landmark suit seeking to break up the Bell System, a suit scheduled to go to trial this fall. And even though the FCC has taken the bold step of letting Bell into the field of data processing and computers, the spate of lawsuits has thrown the full implementation of its decision into doubt. Amid all this legislative and regulatory uncertainty, of course, the technology presses ever onward, blurring the old boundaries, making the old rules ever harder to enforce. Because of this technological pressure, and in spite of the current obstacles, many observers see complete reform as just a matter of time.

"Three years ago the debate was on whether there was going to be competition in telecommunications at all, and how to keep the Bell monopoly separate from the computer business," says Richard M. Neustadt, an associate director of the domestic policy staff at the White House. "Those issues have now been put to bed. The FCC's decision not to regulate may be delayed, but it's inevitable that the industry is going to be opened up to competition."

—WILLIAM J. BROAD



AT&T Photo

The Mouse Phone was first marketed in the early 1970's by American Telecommunications Corp. Since then, Bell has started its own Mouse Phone marketing blitz to meet the competition.